United States Department of Agriculture
Soil Conservation Service
Montana Agricultural Experiment Station
Bozeman, Montana

MONTANA WATER SUPPLY OUTLOOK

Snowpack and Streamflow Forecasts as of May 15, 1982

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P.O. Box 98
Bozeman, Montana 59715
OFFICIAL BUSINESS
(PENALTY FOR PRIVATE USE, $300)

****

THE MONTANA WATER SUPPLY OUTLOOK IS A PUBLICATION OF THE U.S. SOIL CONSERVATION SERVICE. THE SCS ADMINISTERS THE COOPERATIVE SNOW SURVEY PROGRAM IN COOPERATION WITH OTHER FEDERAL, STATE, AND PRIVATE AGENCIES, ORGANIZATIONS, AND INDIVIDUALS.

THE REPORT IS PREPARED BY SCS, SNOW SURVEY AND WATER SUPPLY FORECAST UNIT, P. O. BOX 98, BOZEMAN, MONTANA.

PHILLIP E. FARNES, SNOW SURVEY SUPERVISOR
DONALD J. HUFFMAN, HYDROLOGIST
DENICE SCHILLING, STATISTICAL ASSISTANT
GLENN HERDINA, HYDROLOGIC TECHNICIAN
RICHARD FIKE, HYDROLOGIC TECHNICIAN

FEDERAL - STATE - PRIVATE
COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"In cooperation with the Soil Conservation Service"

Most peak flows expected in June

Weather for the first half of May has not suggested any major change in the volume forecasts that were issued on May 1. Almost all areas can expect a good water supply this season.

Some streams with very low elevation headwaters are near or have reached their peak snowmelt runoff. However, most streams have not yet reached their snowmelt peak. In fact, peak snowmelt runoff from some high elevation drainages may not occur until late June or early July.

Based on current snowpack conditions, the peak snowmelt runoff is expected to occur on streams not regulated by reservoirs as follows:

Missouri River Drainage	
Madison River (Inflow Hebgen)	1st week June
Big Hole River	1st week June
Gallatin River	Mid-June
Jefferson River	1st to 2nd week June
Missouri River (Inflow Canyon Ferry)	Mid-June
Smaller streams in central Montana	Late May

Columbia River Drainage	
Blackfoot	End of May or early June
Upper Clark Fork	Last week in May
Bitterroot	Early to mid-June
North Fork Flathead	End of May or early June
Middle Fork Flathead	End of May

Yellowstone River Drainage	
Yellowstone at Corwin Springs	Mid to late June
Boulder River	Mid-June
Stillwater River	Mid-June
Rock Creek	Mid to late June
Yellowstone at Billings	Early to mid-June

Estimated peak flow volumes were published in the May 1, 1982, Water Supply Outlook for Montana.

The critical factors for snowmelt flows are temperature and precipitation until the low and mid-elevation snow cover is removed. Snowmelt runoff will completely fill most river channels as temperatures rise. Rainfall for an extended period (2 or more days) and in amounts above 1 inch will increase runoff above channel capacities.

Cool temperatures delay melt

Snowpacks are well above average for this date in most areas because of good early season snow accumulation and delayed melt.

Temperatures for the first half of May averaged cooler than normal with little snowmelt above mid-elevations. Early in May, temperatures warmed and snowmelt had just begun when temperatures cooled and storms brought additional moisture. Some valley areas received snow, and the snowpack in all mountain headwaters showed increases in water content. Very little mountain precipitation was noted at SNOTEL sites from May 11 through 17.

Most snowpacks are now isothermal (all of the snow profile at 32°F) and will be melting as temperatures warm. With temperatures in the 70's and 80's, the snow will melt about one inch of snow water equivalent per day.

Ideal weather for moving the low elevation snowmelt downstream would be warm periods with low precipitation followed by cool periods during precipitation events, and no heavy precipitation for extended periods of time.

AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

GOVERNMENT AGENCIES
- Canada
  - Department of the Environment
    - Atmospheric Environment Service
    - Water Management Service
  - British Columbia Ministry of Environment
    - Inventory and Engineering Branch, Hydrology Section
  - Alberta Environment
    - Technical Services Division
- Federal
  - Department of the Army - Corps of Engineers
  - Department of Agriculture - Forest Service
  - Soil Conservation Service
  - Department of Commerce - National Environmental Satellite Service
  - National Weather Service
  - Department of Interior - Bureau of Indian Affairs
  - Fish and Wildlife Service
  - Geological Survey
  - National Park Service
  - Bureau of Reclamation
  - Department of Energy - Bonneville Power Administration

STATE AGENCIES
- Montana Conservation Districts
- Montana Department of Fish, Wildlife and Parks
- Montana Department of Natural Resources and Conservation
- Montana State University - Agricultural Experiment Station
- University of Montana - School of Forestry

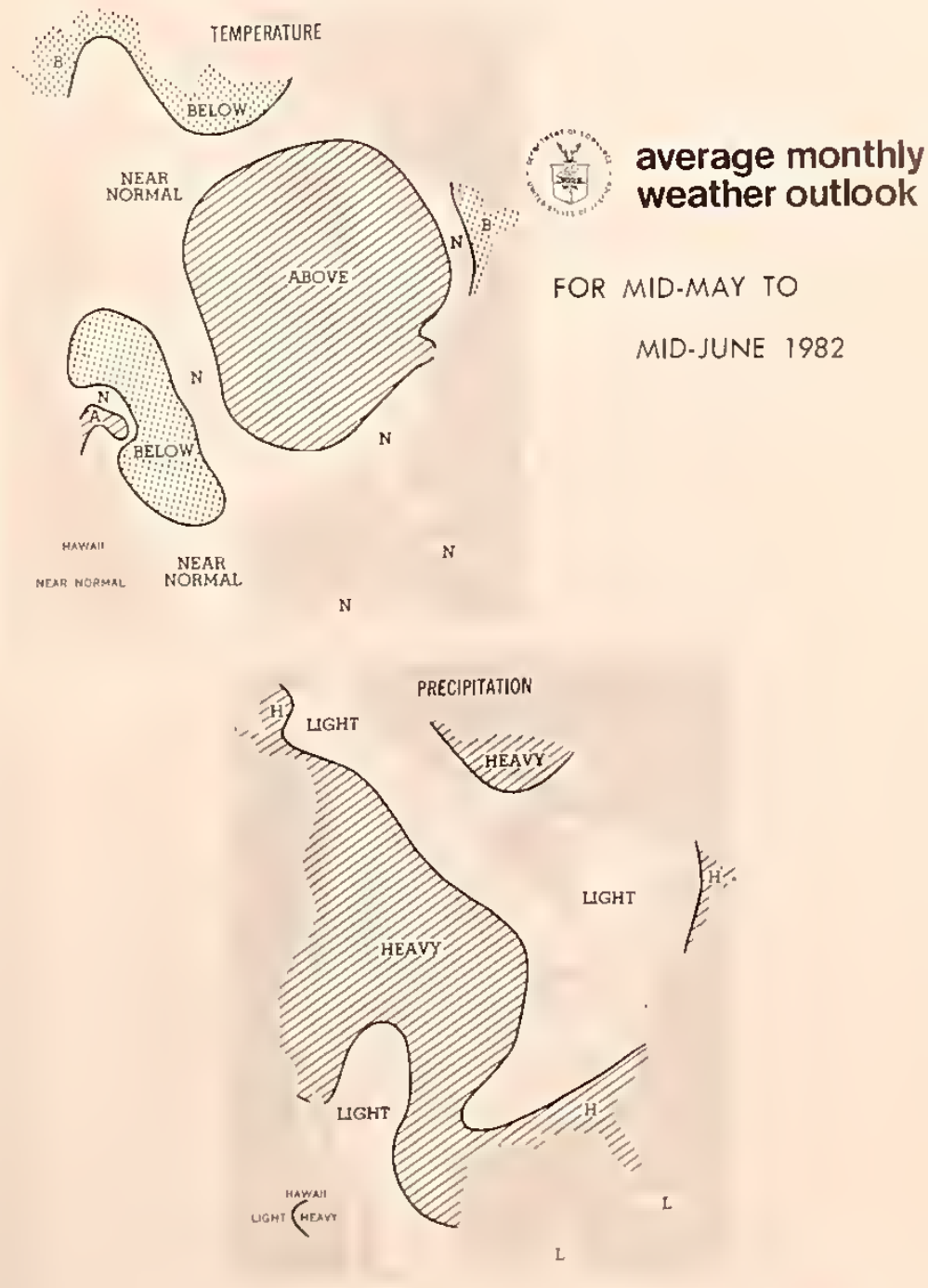
PRIVATE ORGANIZATIONS
- The Anaconda Company
- Big Sky of Montana
- Butte Water Company
- Flathead Valley Community College
- Montana Power Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

SNOW SURVEY DATA

SNOW May 15, 1982

DRAINAGE BASIN and SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (Inches)	THIS YEAR Water Content (Inches)	PAST RECORD Water Content (Inches) Last Year	PAST RECORD Water Content (Inches) Average
BADGER PASS	6900	5/11	117	53.1A	30.4	45.0
BADGER PASS PILLOW	6900	5/11	SP	48.7	27.9	-
BANFIELD MOUNTAIN	5600	5/13	62	29.8	7.4	16.9
BANFIELD MOUNTAIN PILLOW	5600	5/13	SP	25.3	6.0	14.3
BAREE CREEK	5500	5/13	110	52.8	20.0	41.5
BAREE MIDWAY	4600	5/13	75	35.1	5.5	25.0
BAREE TRAIL	3800	5/13	0	.0	.0	0.0
BARKER LAKES PILLOW	8250	5/15	SP	19.4	16.8	-
BASIN CREEK	7180	5/13	40	13.9	8.8	6.1
BASIN CREEK PILLOW	7180	5/15	SP	14.1	12.3	-
BEAGLE SPRINGS	8850	5/15	EST	14.5	6.4	-
BEAGLE SPRINGS PILLOW	8850	5/15	SP	12.5	5.1	-
BLACK BEAR	7950	5/15	EST	55.0	-	41.4
BLACK PINE	7100	5/12	45	18.6	4.0	11.6
BLACK PINE PILLOW	7100	5/12	SP	18.5	7.9	12.4
BLOODY DICK PILLOW	7600	5/15	SP	15.0	3.3	-
BLUE LAKE	5900	5/11	74	34.6A	11.8	21.3
BOTS SOTS	8000	5/14	13	4.6	3.0	10.4
BOULDER MOUNTAIN	7950	5/15	EST	26.1	23.5	-
BOULDER MOUNTAIN PILLOW	7950	5/15	SP	30.7	20.5	-
BOX CANYON	6670	5/15	EST	6.5	0.5	-
BOX CANYON PILLOW	6670	5/15	SP	3.8	0.0	-
BRIDGER BOWL	7250	5/12	74	32.6	24.6	31.1
BRIDGER BOWL PILLOW	7250	5/12	SP	31.9	23.5	29.2
CALVERT CREEK	6450	5/15	EST	2.0	-	-
CALVERT CREEK PILLOW	6450	5/15	SP	.0	0.0	0.0
CAMP SENIA	7890	5/14	15	4.1	3.6	10.6
CARROT BASIN	9000	5/12	120	54.6	-	43.6
CARROT BASIN PILLOW	9000	5/12	SP	41.4	24.8	-
CASHE CREEK PILLOW	7800	5/15	SP	12.6	3.5	-
CLOVER MEADOW	8600	5/15	EST	25.0	17.5	-
CLOVER MEADOW PILLOW	8600	5/15	SP	23.1	16.4	-
COLE CREEK	7850	5/12	55	19.5	17.0	22.4
COLE CREEK PILLOW	7850	5/12	SP	17.8	16.5	20.9
COMBINATION	5600	5/12	12	4.8	.0	1.0
COMBINATION PILLOW	5600	5/12	SP	1.6	0.1	1.1
COPPER BOTTOM	5200	5/15	EST	2.0	.0	-
COPPER BOTTOM PILLOW	5200	5/15	SP	2.6	0.0	0.5
COPPER CAMP	6950	5/15	EST	32.5	21.0	-
COPPER CAMP PILLOW	6950	5/15	SP	46.5	17.9	31.5
COPPER MOUNTAIN	7700	5/14	38	14.9	9.1	8.4
COYOTE HILL	4200	5/14	0	.0	-	-
CRYSTAL LAKE	6100	5/15	EST	10.5	9.5	-
CRYSTAL LAKE PILLOW	6100	5/15	SP	7.2	7.7	-
DALY CREEK PILLOW	5780	5/15	SP	8.2	0.0	-
DARKHORSE LAKE PILLOW	8600	5/15	SP	37.3	21.3	-
DEADMAN CREEK	6450	5/14	15	7.0	-	4.6
DEADMAN CREEK PILLOW	6450	5/14	SP	7.1	0.0	2.9
DISCOVERY BASIN	7050	5/12	35	13.6	6.9	8.6
DIVIDE	7900	5/15	EST	13.5	1.0	7.3
DIVIDE PILLOW	7900	5/15	SP	17.1	5.4	7.6
DIX HILL	6400	5/14	5	2.2	-	3.1
EAST BOULDER S	9250	5/15	87	39.0A	19.5	35.2
EMERY CREEK	4350	5/15	EST	6.2	.0	-
EMERY CREEK PILLOW	4350	5/15	SP	6.2	.0	-
FISH CREEK	8000	5/13	47	17.0	12.8	10.2
FISHER CREEK	9100	5/15	EST	48.0	29.0	45.6
FISHER CREEK PILLOW	9100	5/15	SP	39.0	27.0	43.1
FLATTOP MOUNTAIN PILLOW	6300	5/15	SP	61.5	39.0	52.2
FOURTH OF JULY	3450	5/17	0	.0	.0	-
FRIDAY HILL	4620	5/17	28	14.1	.0	-
FROHNER MEADOWS	6480	5/15	EST	8.0	1.9	5.4
FROHNER MEADOWS PILLOW	6480	5/15	SP	10.1	5.7	6.9
GARVER CREEK	4250	5/13	4	2.0	.0	0.4
GARVER CREEK PILLOW	4250	5/13	SP	3.1	0.3	0.2
GRAVE CREEK	4300	5/13	20	9.4	.0	8.9
GRAVE CREEK PILLOW	4300	5/13	SP	8.7	0.0	2.0
GRIZZLY PEAK	8640	5/12	50	16.2	16.0	23.7
GUYSIGHT LAKE	6300	5/11	106	50.9	25.4	42.6
HAND CREEK	5030	5/15	EST	7.2	.0	-
HAND CREEK PILLOW	5030	5/15	SP	7.4	0.0	-
HAWKINS LAKE	6450	5/13	87	42.0	26.1	33.0
HAWKINS LAKE PILLOW	6450	5/13	SP	36.2	26.4	31.5
HELL ROARING DIVIDE	5770	5/13	69	31.2	20.0	26.1
HOODOO BASIN	6000	5/14	126	67.0	33.6	50.5
HOODOO BASIN PILLOW	6000	5/15	SP	56.5	28.2	46.9
HOODOO CREEK	5900	5/14	120	60.5	28.7	46.2
INTERGAARD	6450	5/14	25	9.4	.0	7.7
KINGS HILL	7500	5/14	46	18.2	12.6	16.7
KRAFT CREEK PILLOW	4750	5/15	SP	6.6	0.0	-
LAKEVIEW RIDGE	7400	5/15	EST	11.0	.0	-
LAKEVIEW RIDGE PILLOW	7400	5/15	SP	7.7	0.0	-
LEMHI RIDGE	8100	5/15	EST	9.5	.3	-
LEMHI RIDGE PILLOW	8100	5/15	SP	10.1	5.6	8.1
LICK CREEK	6860	5/11	28	10.9	3.7	7.0
LICK CREEK PILLOW	6860	5/11	SP	8.2	3.0	6.3
LOOKOUT (ID)	5250	5/14	72	32.2	8.6	25.3
LUBRECHI FLUME PILLOW	4800	5/15	SP	.0	0.0	0.0
MADISON PLATEAU	7750	5/15	EST	29.0	-	19.5
MANY GLACIER	4960	5/15	EST	3.0	.0	-
MANY GLACIER PILLOW	4960	5/15	SP	8.7	0.0	-
MAYNARD CREEK	6210	5/12	41	16.2	5.8	11.4
MAYNARD CREEK PILLOW	6210	5/12	SP	13.6	7.6	9.7
MONUMENT PEAK PILLOW	8800	5/15	SP	27.7	17.2	-
MOULTON RESERVOIR	6850	5/12	19	6.6	-	-
MOUNT LOCKHART	6400	5/15	EST	24.8	8.5	22.2
MOUNT LOCKHART PILLOW	6400	5/15	SP	27.5	12.2	23.6
MULE CREEK PILLOW	8350	5/15	SP	22.5	7.1	-
NEVADA CREEK PILLOW	6480	5/15	SP	18.4	7.1	-
NEWTON MOUNTAIN	5600	5/17	86	41.7	24.6	-
NEZ PERCE CAMP	5650	5/15	EST	11.7	-	4.7
NEZ PERCE CAMP PILLOW	5650	5/15	SP	12.7	0.0	-
NOISY BASIN PILLOW	6040	5/15	SP	49.2	47.4	39.6
NORTH FK. ELK CREEK	6250	5/15	EST	11.0	.0	5.4
NORTH FK. ELK CREEK PILLOW	6250	5/15	SP	14.7	.0	5.5
NORTH FORK JOCKO	6330	5/11	110	54.3	28.2	43.9
NORTHEAST ENTRANCE	7400	5/15	15	5.6	.8	5.0
NORTHEAST ENTRANCE PILLOW	7400	5/15	SP	4.9	0.2	4.2
PETERSON MEADOWS	7200	5/14	35	12.8	8.5	9.7
PETERSON MEADOWS PILLOW	7200	5/14	SP	12.5	10.4	10.3
PICKET PIN D	9450	5/15	70	31.5A	19.0	32.8
PICKFOOT CREEK	6650	5/15	EST	8.2	4.0	-
PICKFOOT CREEK PILLOW	6650	5/15	SP	7.7	1.8	-
PIKE CREEK PILLOW	5930	5/15	SP	34.3	11.5	-
PLACER BASIN F	8830	5/15	55	23.5A	11.5	25.6
PLACER BASIN PILLOW	8830	5/15	SP	21.2	-	-
POORMAN CREEK	5100	5/13	87	44.4	6.1	24.4
POORMAN CREEK PILLOW	5100	5/13	SP	39.2	6.7	24.2
PORCUPINE	6500	5/15	EST	7.0	1.3	-
PORCUPINE PILLOW	6500	5/15	SP	7.4	0.5	-
RED MOUNTAIN	6000	5/17	38	16.8	6.3	15.6
RED TOP	5260	5/17	64	29.8	14.9	-
ROCKER PEAK	8000	5/15	EST	21.5	18.3	16.6
ROCKER PEAK PILLOW	8000	5/15	SP	26.8	19.0	19.0
SADDLE MOUNTAIN	7940	5/15	EST	30.6	21.1	28.7
SADDLE MOUNTAIN PILLOW	7940	5/15	SP	40.6	20.3	29.1
SHOWER FALLS	8100	5/15	EST	34.0	21.5	32.5
SHOWER FALLS PILLOW	8100	5/15	SP	34.6	23.2	31.2
SILVER RUN PILLOW	6630	5/14	SP	.4	0.0	-
SKALKAHO SUMMIT	7260	5/12	74	34.8	16.8	25.8
SKALKAHO SUMMIT PILLOW	7260	5/15	SP	36.4	18.3	-
SKYLARK TRAIL PILLOW	6200	5/15	SP	46.4	14.7	-
SPOTTED BEAR MOUNTAIN	7000	5/11	32	13.4A	.0	6.3
SPUR PARK	8100	5/14	64	27.8	21.5	24.3
SPUR PARK PILLOW	8100	5/14	SP	26.6	21.4	23.8
STAHL PEAK	6050	5/13	95	46.0	35.7	41.7
STAHL PEAK PILLOW	6050	5/13	SP	39.5	32.5	34.4
STAR LAKE E	9650	5/15	117	54.0A	29.0	53.3
STUART MOUNTAIN	7400	5/11	79	37.8	22.4	29.2
TEPEE CREEK	8000	5/15	EST	19.0	11.2	16.7
TEPEE CREEK PILLOW	8000	5/15	SP	17.7	7.6	12.7
TIMBERLINE CREEK	8850	5/14	43	14.6	13.1	19.9
TRINKUS LAKE	6100	5/11	113	52.6	32.4	41.4
TV MOUNTAIN	6800	5/11	49	21.9	10.2	18.9
TWELVEMILE CREEK	5600	5/15	EST	6.3	.5	8.4
TWELVEMILE CREEK PILLOW	5600	5/15	SP	5.9	0.0	7.2
TWIN CREEKS	3580	5/11	8	3.6A	.0	0.0
TWIN LAKES	6510	5/15	EST	50.5	23.9	43.0
TWIN LAKES PILLOW	6510	5/15	SP	63.8	22.0	40.3
UPPER HOLLAND LAKE	6200	5/11	89	41.4	17.3	33.8
WALDRON	5600	5/15	EST	5.2	.0	1.0
WALDRON PILLOW	5600	5/15	SP	6.5	0.0	3.8
WARM SPRINGS	7800	5/14	62	25.8	16.8	-
WARM SPRINGS PILLOW	7800	5/14	SP	30.9	21.5	-
WEASEL DIVIDE	5450	5/13	81	39.8	22.6	31.3
WHISKEY CREEK	6800	5/13	41	20.6	-	10.8
WHISKEY CREEK PILLOW	6800	5/13	SP	19.0	0.5	10.4
WHITE MILL	8700	5/15	EST	36.5	21.2	32.0
WHITE MILL PILLOW	8700	5/15	SP	32.8	15.0	26.3
WILLOW CREEK	6500	5/12	5	1.3	2.3	3.2
WOOD CREEK PILLOW	5960	5/15	SP	13.0	0.0	-



average monthly weather outlook

FOR MID-MAY TO

MID-JUNE 1982

U.S. GOVERNMENT PRINTING OFFICE
1982 593-052